STEVEN L. BESHEAR
GOVERNOR

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
200 FAIR OAKS LANE
FRANKFORT, KENTUCKY 40601
www.kentucky.gov

LEONARD K. PETERS
SECRETARY

RECEIVED
JAN 2 3 2009
By

January 6, 2009

Kenneth Rust
1305 County Road 1234
Arlington, Kentucky 42021

Re: Kenneth Rust Hog Farm
Technical Notice of Deficiency
AI No.: 100811
Carlisle County, Kentucky

Dear Mr. Rust:

The Surface Water Permits (SWP) Branch is currently reviewing the construction permit application for the facility referenced above.

The SWP Branch issued a technical notice of deficiency on November 12, 2008 and in response, amendments to the Comprehensive Nutrient Management Plan (CNMP) were received on December 10, 2008.

Thank you for addressing the points outlined in the notice of deficiency. However, some concerns remain. Please address the following item and submit your amended CNMP, or a portion thereof, to the SWP Branch of the Division of Water.

1. The CNMP amendment showing average crop yields based on data from the USDA National Agricultural Statistics Service (NASS) contains calculation errors. Commodity yield values from 1997 through 2007 represent eleven years of data, not ten. Please adjust the averages and subsequent calculations accordingly.

Upon receipt of this information, our review will continue. Please be aware that further review may produce additional deficiencies. If you have any questions concerning this request, please contact me at (502) 564-8158, extension 4896 or by e-mail at ronnie.thompson@ky.gov.

Sincerely,

Ronnie Thompson

Ronnie Thompson, KPDES Permit Writer
Operational Permits Section
Surface Water Permits Branch
Division of Water

See Attached Corrected

Soybeans

Commodity	Year	State	County	Yield
Soybeans	1998	Kentucky	Carlisle	34
Soybeans	1999	Kentucky	Carlisle	22
Soybeans	2000	Kentucky	Carlisle	40
Soybeans	2001	Kentucky	Carlisle	40
Soybeans	2002	Kentucky	Carlisle	37
Soybeans	2003	Kentucky	Carlisle	41
Soybeans	2004	Kentucky	Carlisle	45
Soybeans	2005	Kentucky	Carlisle	44
Soybeans	2006	Kentucky	Carlisle	44
Soybeans	2007	Kentucky	Carlisle	28
				375 Divided by 10 years = 37.5 bu/ac average

P_2O_5 (0.70) x 37.5 = 26.25 p removed

K_2O (1.10) x 37.5 = 41.25 K removed

Source of Data USDA Nation Agricultural Stat Service N.A.S.S.

Corn

Commodity	Year	State	County	Yield
Corn For Grain	1998	Kentucky	Carlisle	118
Corn For Grain	1999	Kentucky	Carlisle	107
Corn For Grain	2000	Kentucky	Carlisle	133
Corn For Grain	2001	Kentucky	Carlisle	152
Corn For Grain	2002	Kentucky	Carlisle	113
Corn For Grain	2003	Kentucky	Carlisle	141
Corn For Grain	2004	Kentucky	Carlisle	154
Corn For Grain	2005	Kentucky	Carlisle	153
Corn For Grain	2006	Kentucky	Carlisle	154
Corn For Grain	2007	Kentucky	Carlisle	161
				1386 Divided by 10 years = 138.6 bu/ac average

P_2O_5 (0.40) x 138.6 = 55.44 removed

K_2O (0.35) x 138.6 = 48.51 removed

Source of Data USDA Nation Agricultural Stat Service N.A.S.S.

Wheat

Commodity	Year	State	County	Yield
Wheat All	1998	Kentucky	Carlisle	41
Wheat All	1999	Kentucky	Carlisle	42
Wheat All	2000	Kentucky	Carlisle	50
Wheat All	2001	Kentucky	Carlisle	52
Wheat All	2002	Kentucky	Carlisle	50
Wheat All	2003	Kentucky	Carlisle	50
Wheat All	2004	Kentucky	Carlisle	51
Wheat All	2005	Kentucky	Carlisle	60
Wheat All	2006	Kentucky	Carlisle	60
Wheat All	2007	Kentucky	Carlisle	47
				503 Divided by 10 years = 50.3 bu/ac average

P_2O_5 (.50) x 50.3 = 25.15

K_2O (.30) x 50.3 = 15.09

Source of Data USDA National Agricultural Stat Service N.A.S.S.

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Appendix B - Page No. 6cwb - Estimating Cropland needed to Utilize Nutrients

Part A. Agronomic Utilization of Animal Manure

Primary Crop that animal manure will be applied to meet nitrogen recommendations based on AGR-1 is;	**Corn**

Yields used, based on 10 year average of Corn, Wheat and Bean yieldsr Carlisle Co., source of data N.A.S.S.

Other crops grown in rotation that will also remove applied nutrients are; (Crop Removal rates based on NRCS KYFOTG 590)	**Wheat & Soybeans**

AGR-1 Table 12 Recommended application of **Nitrogen** (lbs /A) for Corn production in KY.	Soil Drainage Class		
	Well drained	**Mod Well drained**	Poorly drained
Conventional Tillage	100-140	140-175	175-200
Conservation Tillage	125-165	**165 to 200**	

Nitrogen recommendations in Kentucky are not based on soil analysis but AGR-1 recommendations for crop.

(A) Total Available Nitrogen (lbs)	**(B) Planned Amount (lbs/ac) Nitrogen to be applied**	**(C) Corn acreage needed if Nitrogen Based Plan is applied (A/B)**	**(D) Based on Manure analysis Application Rate Gallons per acre**
51,409.15 lbs	165 lbs/ac	311.6 acres	**6,706.7 gallons/ac**

(E) Total Available Phosphorus (lbs)	**(F) Total Available Phosphorus Applied *(E/311.6 ac)* (lbs/ac)**	**(G) 138.6 bu /ac Corn Phosphorus removal (lbs/ac)**	**(H) 50.3 bu/ac Wheat Phosphorus removal (lbs/ac)**	**(I) 37.5 bu/ac Beans Phosphorus removal (lbs/ac)**	**(J) Total Phosphorus removed by Corn, Wheat, and Bean Rotation *(G+H+I)***	**(K) Estimated Available Phosphorus Carryover (J-F) (lbs/ac)**
53,498.95	171.7	55.44 lbs	25.15 lbs	26.25 lbs	106.84 lbs	+64.86 lbs

(L) Total Available Potassium (lbs)	**(M) Total Available Potassium Applied *(L/311.6 ac)* (lbs/ac)**	**(N) 138.6 bu /ac Corn Potassium removal (lbs/ac)**	**(O) 50.3 bu/ac Wheat Potassium removal (lbs/ac)**	**(P) 37.5 bu/ac Beans Potassium removal (lbs/ac)**	**(J) Total Potassium removed by Corn, Wheat, and Bean Rotation *(N+O+P)***	**(K) Estimated Available Potassium Carryover (K-M) (lbs/ac)**
58,514.48	187.8	48.51	15.09	41.25	104.85	+82.95

Nitrogen based plan was selected base on KY NRCS 590. Phosphorus Index option # 1 no fields have soil test phosphorus (STP) at or above 400 lbs/ acre. Furthermore, there are no field which have a Phosphorus Index greater than a " medium hazard" which also allows Nitrogen based application of animal waste up to 1066 lbs STP.

Appendix B - Page No. 6cb -- Estimating Cropland needed to Utilize Nutrients

Part A. Agronomic Utilization of Animal Manure

Primary Crop that animal manure will be applied to meet nitrogen recommendations based on AGR-1 is;	**Corn**
Average yields based on 10 year Average for Carlisle Co., source of data N.A.S.S.	
Other crops grown in rotation that will also remove applied nutrients are; (Crop Removal rates based on NRCS KYFOTG 590)	**Soybeans**

AGR-1 Table 12 Recommended application of **Nitrogen** (lbs /A) for Corn production in KY.	Soil Drainage Class		
	Well drained	**Mod Well drained**	Poorly drained
Conventional Tillage	100-140	140-175	175-200
Conservation Tillage	125-165	**165 to 200**	

Nitrogen recommendations in Kentucky are not based on soil analysis but AGR-1 recommendations for crop.

(A) Total Available Nitrogen (lbs)	**(B) Planned Amount (lbs/ac) Nitrogen to be applied**	**(C) Corn acreage needed if Nitrogen Based Plan is applied (A/B)**	**(D) Based on Manure analysis Application Rate Gallons per acre**
51,409.15 lbs	165 lbs/ac	311.6 acres	**6,706.7 gallons/ac**

(E) Total Available Phosphorus (lbs)	**(F) Total Available Phosphorus Applied *(E/311.6 ac)* (lbs/ac)**	**(G) 138.6 bu /ac Corn Phosphorus removal (lbs/ac)**	**(H) 0 bu/ac Wheat Phosphorus removal (lbs/ac)**	**(I) 37.5 bu/ac Beans Phosphorus removal (lbs/ac)**	**(J) Total Phosphorus removed by Corn,, and Bean Rotation *(G+H+I))***	**(K) Estimated Available Phosphorus Carryover (J-F) (lbs/ac)**
53,498.95	171.7	55.44 lbs	0.0 lbs	26.25 lbs	81.69 lbs	+90.01 lbs

(L) Total Available Potassium (lbs)	**(M) Total Available Potassium Applied *(L/311.6 ac)* (lbs/ac)**	**(N) 138.6 bu /ac Corn Potassium removal (lbs/ac)**	**(O) 0 bu/ac Wheat Potassium removal (lbs/ac)**	**(P) 37.5 bu/ac Beans Potassium removal (lbs/ac)**	**(J) Total Potassium removed by Corn, and Bean Rotation *(N+O+P)***	**(K) Estimated Available Potassium Carryover (K-M) (lbs/ac)**
58,514.48	187.8	48.51	0.0	41.25	89.76	+98.04

Nitrogen based plan was selected base on KY NRCS 590, Phosphorus Index option # 1 no fields have soil test phosphorus (STP) at or above 400 lbs/ acre. Furthermore, there are no field which have a Phosphorus Index greater than a " medium hazard" which also allows Nitrogen based application of animal waste up to 1066 lbs STP.

Utilization of Phosphorus Carryover by Crop Rotation

Based pm the example swine waste analysis, as a result of applying the 2,089,803.0 gallons on 311.6 acres (6,706.7 gallons/ac) this application rate will also result in the application of approximately 171.7 lbs/ac of Phosphate (P205) and 187.8 lbs/ac of Potassium (K2O).

The uptake or utilization of total phosphorus and potassium will be based on the estimated plant needs of the Corn + Wheat + Soybeans, (page 6cwb) and on bottomland, a Corn + Full Season Soybean rotation (page 6cb). The calculation for uptake of P & K is based on KY NRCS FOTG Standard 590, appendix A, table 6, "crop nutrient removal values". The yields used in the calculation of this value is based on the National Agriculture Static's Service (N.A.S.S.) 10 year average Corn, Wheat and Soybean yields for Carlisle County Kentucky.

NRCS 590 estimates that after a Corn, wheat and soybean rotation, approximately 64.86 lbs/acre of phosphorus and 82.95 lbs/ac of potassium carryover is projected. Furthermore, on the somewhat poorly drained bottomland where wheat will not be grown in the rotation, a projected carry over of 90.01 lbs/ac of phosphorus and 98.04 lbs/ac of potassium is estimated as carryover. At this time potassium carry over is not considered a water or soil quality concern. **See Appendix B, page 6cb and page 6cwb – Estimating Cropland Needed to Utilize Nutrients.**

Additional application of Commercial fertilizer

No additional applications of phosphorus and potassium will be applied to crop fields planned for application of animal waste. However, additional applications of Nitrogen will be applied to completely fill or meet the maximum nitrogen recommendations for wheat. Total nitrogen applied will be based on University of Kentucky Cooperative Extension Service publication AGR-1. At this time plans are to applying an additional spring application of 95 lbs/ac Nitrogen to wheat.

Land Application Location, Acreage, Methods, Timing, Form, and Rates

Manure will be applied using a liquid vacuum implement typically used to inject swine manure. Manure will be injected in the spring when ground conditions permit and not greater than 30 days prior to the planting of corn. **See Appendix B, page 7 & 8 – Planned Application Summary record to obtain farm ID information, field numbers, cropland acres, planned crop, application timing, form of waste, application method, planned nitrogen application rates, manure application rates in gallons per acre, Soil Test Phosphorus levels and NRCS Phosphorus Index (PI) ratings.**